

CLAIMS

1. A microporous polyethylene film, comprising a blend that comprises a high density polyethylene copolymer which has a melt index (MI) of 0.1 to 100 and a content of an α -olefin unit with 3 or more carbon atoms of 0.1 to 1% by mole; and a high density polyethylene which has a viscosity average molecular weight (M_v) of at least 500000 to 5000000, wherein the blend has an M_v of 300000 to 4000000 and a content of an α -olefin unit with 3 or more carbon atoms of 0.01 to 1% by mole.
2. A microporous polyethylene film, comprising a blend that comprises a high density polyethylene copolymer which has a melt index (MI) of 0.1 to 100 and a content of an α -olefin unit with 3 or more carbon atoms of 0.1 to 1% by mole; and a homopolyethylene which has an M_v of at least 500000 to 5000000, wherein the blend has an M_v of 300000 to 4000000 and has a content of an α -olefin unit with 3 or more carbon atoms of 0.01 to 1% by mole.
3. A microporous polyethylene film, comprising a blend that comprises a high density polyethylene copolymer comprising an α -olefin unit with 3 or more carbon atoms, and a high density polyethylene which has an M_v of at least 500000 to 5000000, characterized in that the microporous polyethylene film has a weight fraction measured by GPC of a component having a molecular weight of 1000000 or less of 1 to 40%, and a

weight fraction measured by GPC of a component having a molecular weight of 10000 or less of 1 to 40%, the component having a molecular weight of 10000 or less has a content of an α -olefin unit with 3 or more carbon atoms of 0.1 to 1% by mole, and the blend has an M_v of 300000 to 4000000, and a content of an α -olefin unit with 3 or more carbon atoms of 0.01 to 1% by mole.

4. The microporous polyethylene film according to any one of claims 1 to 3, wherein the α -olefin is propylene.

5. The microporous polyethylene film according to any one of claims 1 to 4, wherein the polyethylene having an M_v of 500000 to 5000000 is a blend of two or three kinds selected from the following polyethylenes (A), (B) and (C):

(A) the polyethylene having an M_v of 1500000 or more and less than 5000000; (B) the polyethylene having an M_v of 600000 or more and less than 1500000; and (C) the polyethylene having an M_v of 250000 or more and less than 600000.

6. The microporous polyethylene film according to any one of claims 1 to 4, wherein the polyethylene having an M_v of 500000 to 5000000 is an ultrahigh molecular weight polyethylene having an M_v of 1500000 or more.

7. The microporous polyethylene film according to any one of claims 1 to 6, having a film rupture temperature of 150°C or higher.

8. The microporous polyethylene film according to any one of claims 1 to 7, having a shrinkage force at 150°C of 2N or less.
9. The microporous polyethylene film according to any one of claims 1 to 8, having a fusing temperature of 140°C or lower.
10. The microporous polyethylene film according to any one of claims 1 to 9, having a thickness 5 to 24 µm.
11. The microporous polyethylene film according to any one of claims 1 to 10, having a porosity of 30 to 70%.
12. The microporous polyethylene film according to any one of claims 1 to 11, having an air permeability of 100 seconds or more and 600 seconds or less.
13. A battery separator, comprising a microporous film according to any one of claims 1 to 12.